INTERSTATE 405 Corridor Program
Congestion Relief & Bus Rapid Transit Projects

APPENDIX O1-C

Stormwater Design Decision, Forested Vs. Existing Pre-Development Conditions

I-405, SR520 to SR522 Stage 1 (Kirkland Stage 1)

Request For Proposal
July 15, 2005

Washington State Department of Transportation

INTERSTATE 405 Project Team
Congestion Relief & Bus Rapid Transit Projects

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Stormwater Design Decision
Forested vs. Existing Pre-development Condition
Kirkland Nickel Project

June 24, 2004

Washington State
Department of Transportation

Introduction

The purpose of this paper is to formalize and document the decision to use a forested condition for the pre-development land cover assumption when determining stormwater flow control treatment for the Kirkland Nickel Project.

We based this decision on information we gatherd dealing with three main factors:

- overall benefit to the environment,
- lack of significant increase in project costs to follow this approach, and
- the need to obtain necessary project permits for construction as quickly as possible.

In addition, the team investegated whether the decision to design to the forested condition would have a precedent setting effect. We found in our conversations with the Headquarters Water Quality group that this decision will *not* have a precedent setting effect within the WSDOT or within local resource agencies.

Background

Project engineering staff have been using the February 1995 Highway Runoff Manual (HRM) and Instructional Letter (IL) 4020.02 along with Ecology's 2001 Stormwater Management Manual while designing the Kirkland Nickel Project.

The Ecology Manual requires that stormwater flow control treatment (detention orifice controlled discharge, etc.) be designed for *forested* ground cover (pre-development conditions). In March 2004, WSDOT issued the 2004 HRM and in a letter to WSDOT, Ecology *conditionally approved* the revised HRM for use as an equivalent approach to the *Stormwater Management Manual for Western Washington (2001)* SMMWW and for compliance with Ecology permits. However, a few conditions apply, and this is where the issue of designing for forested vs. existing conditions comes into play. The letter states: "Unless the existing condition is forested, projects requiring Ecology approval for flow control in Western Washington, per an individual permit, will need to have the flow control standard decided and approved on a case-by-case basis...." This new 2004 HRM basically complies with the Ecology Manual with an *exception* being that *existing* conditions ground cover be used for pre-development conditions.

Unless a decision has been documented to follow a different approach, projects going to advertisment in the 2005-2007 biennium are required to use the 2004 HRM. This paper is intended to document the sound reasons the Kirkland Nickel Project choses to take a different approach.

Decision Basis

The forested ground cover pre-development decision for this project was based on the following:

Overall benefit to the environment:

- Provide a pristine forested condition discharge rate to receiving waterbodies, which provide habitat for salmonids.

Project costs based on Forested versus Existing conditions:

- The project was modeled for both the forested and the existing pre-development land cover conditions. The forested pre-development model requires a 62 percent increase in detention volume above what the existing condition model requires for the overall project area (7.02 ac-ft total detention volume vs. 4.34 ac-ft)
- Storm drainage detention quantities were estimated for each of the two models. Using CEVP unit rates, the base cost for the existing condition detention construction is $1.24 million. This compares to a base cost of $1.91 million for the forested condition detention work, or an increase of 54 percent.

Affect to project in obtaining necessary permits:

- Although the WSDOT ESO and DOE Headquarters have agreed to disagree regarding the pre-development condition to date, they continue to discuss the design standard. It is likely that a middle ground will be agreed upon which considers the amount of total existing impervious area.
- The range of current impervious area under discussion, for a project to consider "existing" as its pre-development condition, has ranged from about 35% (WSDOT) to 45% (DOE). The current impervious surface area in the Kirkland project is about 32 %.
- Concerns have been raised regarding risks to complete the permit process within the accelerated schedule for the Kirkland Nickel project if drainage design proceeded with the new HRM landcover requirements.
- Designing to forested conditions would likely:
    - Reduce the risk that the project would need to re-design to forested conditions assuming that the newly negotiated NPDES permit requires the use of the forested design standard.
    - Reduce the risk that Ecology would require the issuance of an individual NPDES permit, which could stipulate use of the forested condition design standard.
    - Have easier approvals from WDFW because they were not or did not participate in the development of the 2004 HRM
    - Comply with local stormwater manuals. For example, King County's manual update is slated for the end of 2004 and they are expected to adopt Ecology's manual.
    - Have easier ESA consultation negotiations as NOAA Fisheries and the USFWS did not participate in development of the 2004 HRM.

- Instill more confidance in the Contractor, reducing the risk that their design will meet agency reviews and permit requirements if this criteria is included in the RFP.

Decision Summary

We discovered that each project team within WSDOT has been given the descretion within their project area make a determination of what approach best fits their circumstances, and determines the best path for that specific project. ESO supports this process and ESO has agreed that setting a precedent has not been considered a significant factor for any one project's decision affecting another project's decision

Based on this paper's above discussion, the determination has been made to allow the Kirkland Nickel Project to use the forested ground cover pre-development condition.

Concurring Approvals:

_____ _____

Kimberly Farley Date
UCO Environmental Manager

_____ _____

Megan White Date
Director of Environmental Services

Memorandum

June 30, 2004

TO: Megan White, MS47331
Director of Environmental Services

FROM: Craig Stone, MS NB82-250
I-405 Project Director

SUBJECT: I-405 Kirkland Nickel Project
Existing vs. Forested Stormwater Decision

Attached you will find an I-405 Corridor Decision Paper regarding Stormwater within the Kirkland Nickel Project. The purpose of the paper is to formalize and document the decision to use a forested condition for the pre-development land cover assumption when determining stormwater flow control treatment for the Kirkland Nickel Project.

Each project faced with this decision must review their specific project area to make a determination of what approach best fits their circumstances, and determine the best path for their project.

We based our decision on information we gathered dealing with three main factors:

- overall benefit to the environment,
- lack of significant increase in project costs to follow this approach, and
- the need to obtain necessary project permits for construction as quickly as possible.

In addition, the team investigated whether the decision to design to the forested condition would have a precedent setting effect.

Within the I-405 Corridor program, we document decisions as we move forward in our design process. Depending on the decision, concurrence is required from differing levels of authority within the project. At times, we find documenting these decisions as we move forward very important outside the project team as well.

In this particular case, since we are not following the current Highway Runoff Manual regarding the pre-development land cover assumption when determining stormwater flow control treatment, we have added an area to our Decision Paper for your concurrence. We have discussed this decision with Kimberly Farley of UCO and

Memorandum

have already received her concurrence on this decision. If you, too, are comfortable in concurring with our decision, you may sign the attached and return the original to my office at MS250.

If you have any questions, or would like to discuss this decision further with either Kimberly Farley or me, please feel free to contact us. My telephone number is 425-456-8550.

I appreciate your taking the time to review this Decision Paper and hope you will concur with our project's conclusion.

DC
Attachment: Stormwater Decision Paper

cc: File

2. **Summary Description of Proposed Revision:**

- Summarize why this PCF is being submitted (What has changed?)
  Review and analysis of the I-405 Program, including accomplishing the CEVP, has identified changes needed within the project and biennial amounts. Right-of-way (RW) costs have reduced significantly while need for additional preliminary engineering (PE) in the 2005-07 biennium has been identified. The reduced need for RW funding allows for the needed PE as well as additional funding for construction, within the existing project total budgets.

- Briefly describe what has caused the change:
  The original budgets for the I-405 Nickel projects were prepared over a very short period of time at the request of the Legislature during February of the 2003 Legislative session. Though the overall total project budgets remain adequate to address the identified congestion solutions, the original Preliminary Engineering (PE) and Right-of-Way (RW) amounts no longer reflect the appropriate amounts to complete those phases. The PE budgets underestimated the quantity of corridor design work necessary to provide a basis for the Nickel projects as well as support Regional Transportation Investment District funding possibilities with adequately planned, scoped and estimated projects. On the other hand, the Right-of-Way budgets were estimated higher than is currently identified to be needed. This was partly due to the lack of roadway design information to define the RW and being intentionally conservative estimating RW for environmental needs, such as wetland mitigation sites and storm water treatment and retention. The design level is substantially improved for both roadway and environmental needs producing the revised estimated amounts.

  The purpose of increasing PE by $16 million in the 2005-07 biennium is to further corridor work in preparation for future funding opportunities, regardless of source, and to provide the necessary support for future regional funding processes. The products to be delivered with this additional PE include:
  - Scope and estimate (including CEVP) moderate size projects in preparation for potential funding actions.
  - Develop major project scenarios in support of regional transportation funding initiatives. This includes scoping and estimating (including CEVP) the projects included in the scenarios.
  - Develop a strategic Implementation Plan to communicate how the long range vision, the medium range plan and the short range funded and unfunded phases can be pursued to move the I-405 Program forward.
  - Prepare the North Renton project for quick and efficient start up by completing design/build plans and contract documents and right-of-way plans. These will be built upon the EA and corridor design (5%) completed with existing funds.
  - Move the South Renton project forward by completing the corridor design (5%), completing the environmental documentation, progressing into the design/build plan preparation and completing right-of-way plan development.
  - Move the Bellevue project forward by completing the corridor design (5%), completing the environmental documentation, progressing into the design/build plan preparation and completing right-of-way plan development.
  - Further develop the innovative watershed based environmental mitigation. Move two or more Early Environmental Investment projects forward for early action by completing conceptual and final designs, completing environmental documentation and permitting to be ready to initiate construction.

- Develop and accomplish the geotechnical program for the corridor.
- Traffic analysis to support recommendations for small, medium and large program scenarios.
- Updated aerial mapping in areas where conditions have changed.
- A benefit of accomplishing this PE work is allowing the ability to taper down the reduction of staff and keeping the core workforce through most of the 2005-07 biennium which allows the ability to start up projects quickly should they become funded through a regional funding package.

- Include references to any previous Beige Page reports on the same project:
  A Beige Page Opportunities and Options for Legislative Consideration was submitted in the December 31, 2003 Gray Notebook. This proposal was to split the Kirkland project into two stages and have the first Stage become the first Nickel project constructed on I-405 while retaining the biennial expenditure plan unchanged. This was approved by the 2004 Legislature.

5. Proposed program adjustments to accommodate unprogrammed project or cost/scope/schedule revision:

(Include what action the Department needs to take to resolve, mitigate, implement, or accommodate the revision.)

These changes are internal to each project and do not affect schedule, project total budgets or Nickel Program biennial allocations. The RW cost reductions will allow adding the $16 million of needed PE as well as additional funding to construction so the PE, RW and CN phase amounts for each project change but the changes are balanced to the prescribed biennial expenditure plan for the I-405 Nickel project program.